

Analysis of inventory strategies for blood components in a regional blood center using process simulation.

Baesler, Felipe; Nemeth, Matías; Martínez, Cristina; Bastías, Alfonso

Transfusion

2014, Vol. 54 Issue 2, p323-330. 8p. 2 Diagrams, 5 Charts, 4 Graphs.

Resumen:

Background The storage of blood components is an important concern in the blood supply chain. Because these are perishable products, the definition of good inventory policies is crucial to reduce shortages and spills. **Study Design and Methods** To analyze and propose inventory policies in a regional blood center, a discrete event simulation model was created using simulation software (Arena 12.0, Rockwell Software). The model replicates the activities that are performed along the supply chain including donation arrivals, testing, production, inventory management, and dispatching. **Results** Twelve different scenarios were analyzed, with each one representing different inventory policies composed of a combination of an optimal inventory, a reorder point, and a level of extra donations. The best scenario demonstrates that it is possible to decrease unsatisfied demand and wastage of red blood cell units by 2.5 and 3%, respectively, when compared to current practices. **Conclusions** This study shows that simulation is an alternative that can be used to model inventory components in blood centers. A responsible selection of inventory variables can improve the capability of the system to respond to the final patient requirements. [ABSTRACT FROM AUTHOR]

DOI:

10.1111/trf.12287

Descriptores:

Medical research; Blood products; Blood supply; Simulation software; Hemapheresis; Directed blood donations